

REMARKS

Applicant requests favorable reconsideration and allowance of this application in view of the foregoing amendments and the following remarks.

Claims 1, 3, 5, 7-12, 17, 19, 20, 24, and 26-28 are pending in this application, with Claims 1, 20, 24, and 28 being independent.

Claims 1, 3, 5, 7-12, 17, 19, 20, 24 and 26-28 have been amended. Applicant submits that support for these amendments can be found in the original disclosure, and therefore no new matter has been added..

Claims 26 and 27 stand rejected under 35 U.S.C. 101 because they are allegedly directed to a computer program per se. Those claims have been amended to recite a program embodied in a computer-readable medium and a computer-readable storage medium, respectively, and Applicant submits that they recite statutory subject matter. Favorable reconsideration and withdrawal of this rejection are requested.

Claims 24 and 26-28 were rejected under 35 U.S. C. 112, first paragraph, as being based on a disclosure that is not enabling. The Examiner objected to the failure to expressly recite a computer to implement the claimed method. These claims have been amended to recite a computer-implemented method, as suggested by the Examiner. Favorable reconsideration and withdrawal of this rejection are requested.

Claims 1-28 were rejected under Section 112, 1st paragraph, as allegedly being based on a non-enabling disclosure. The Examiner objected to the recitation of an image pick-up device having a fixed positional relationship with respect to a measurement object. Applicant respectfully submits that in making this rejection, the Examiner has misunderstood the measurement object to be an object that is imaged. That is not the case. The measurement object is an observer or some other object on which a camera and an

attitude sensor are mounted, as discussed in the specification at least with respect to Modification 2 at page 38, line 21 to page 39, line 12, for example. Amendments have been made to further clarify this point. For example, Claim 1 now recites an image pickup device mounted on a measurement object. Accordingly, reconsideration and withdrawal of this rejection are requested.

Claims 1 and 24 were rejected under 35 U.S.C. 112, as being indefinite for failing to particularly point out and distinctly claim the subject matter which is regarded as the invention. The Examiner objected to the phrase “adapted for.” Amendments have been made to eliminate that phrase. With respect to the term “roll angle,” Applicant submits that one skilled in the art would understand that term to refer to a rotation angle in the roll direction, as discussed for example at least at page 11, lines 23-27. Amendments have been made to address the Examiner’s objection. Accordingly, favorable reconsideration and withdrawal of this rejection are requested.

Claims 1, 9, 17, 19-20, 24 and 26-28 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,330,356 (Sundareswaran et al.) in view of U.S. Patent No. 5,933,530 (Kim et al) and U.S. Patent No. 5,765,561 (Chen). Claims 3, 5, 7-8 and 10-12 were rejected under 35 U.S.C. 103(a) as being unpatentable over Sundareswaran, Kim, and Chen as applied to claim 1 and further in view of Rallison et al. These rejections are respectfully traversed.

As recited in independent Claim 1, the present invention includes, *inter alia*, the feature of detecting the position of an index in a target image by performing a template matching process. Generally, since a current image picked-up by a sensor may be completely different from a previous image picked-up by the sensor, a previous result of a template matching process cannot be used for a current template matching process if the

position and/or orientation of the image pick-up device have changed greatly. In the present invention according to Claim 1, however, the target image used in the template matching process is obtained by rotating an extracted image using a rotation angle in a roll direction based on a measured value output from an orientation sensor. With this arrangement, the template matching process can be performed even if the position and/or orientation of an image pick-up device are changed greatly. Applicant submits that the cited art fails to disclose or suggest at least these features.

Sundareswaran discloses a technique for calculating a position of a marker based on rotation and position of a camera. However, that patent fails to disclose or suggest applying the calculated position to a template matching process.

The other cited art fails to remedy the deficiencies of Sundareswaran. Kim fails to disclose or suggest at least the feature of performing template matching using a target image obtained using a measured value from an orientation sensor.

Chen merely discloses that a position and orientation sensor with six degrees of freedom can be used for an alignment method. The use of such a sensor for alignment is well-known. Also, applying a position and orientation sensor and markers to perform alignment is well-known. However, Chen does not disclose or suggest obtaining a target image by rotating an extracted image using a rotation angle in a roll direction according to a measured value from an orientation sensor, and using the target image in a template matching process.

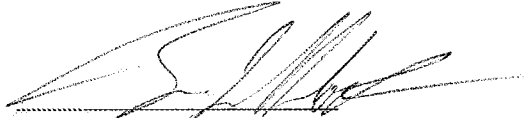
Accordingly, Applicant submits that the cited art fails to disclose or suggest at least the above-discussed features of Claim 1, whether considered individually or combination, fail to disclose or suggest at least the above-mentioned features. Therefore, Applicant submits that Claim 1 is patentable over the art of record.

The other independent claims recite similar features and are believed patentable for reasons similar to Claim 1. The dependent claims are believed patentable for at least the same reasons as the independent claims, as well as for the additional features they recite.

In view of the foregoing, this application is believed to be in condition for allowance. Favorable reconsideration, withdrawal of the outstanding rejections, and the issuance of a Notice of Allowance are respectfully solicited.

Applicant's undersigned attorney may be reached in our Washington, D.C. office by telephone at (202) 530-1010. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,

A handwritten signature in dark ink, appearing to read 'B. L. Klock', is written over a horizontal line.

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